

## ABSTRACT OF THE DISCLOSURE

Apparatus and method for molding a tire (110) with a radially expandable bead molding ring (252). When expanded, the bead molding ring has a circumferentially continuous radially outward-facing surface (259) for molding the bead. The bead molding ring comprises a plurality of segments (254, 256), half of the segments being first segments (254) that are complementary to, and circumferentially alternated with second segments (256). The first segments are wedge shaped, having circumferentially lateral faces (255) that converge towards the radially outward-facing bead molding surface of the bead molding ring, the first segment lateral faces being planar and oriented in the axial direction; and the second segments have lateral faces (257) that are complementary to the first segment lateral faces, such that radially outward movement of the first segments (254) causes radially outward movement of the second segments (256). Guide rods (260) restrict first and second segments to radial movement (310) only. The elements of the bead molding ring are preferably combined in a single assembly (280) with the sidewall mold to form a unit that is easily maintained and changed to adapt to different profiles to be molded on beads of different tire constructions. Expansion of the bead molding ring can be driven by a simple wedging action caused by a single frustraconical cam 266.

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